Space Weather Forecast

Issued on Saturday 14 December 2024 at 00:56 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Occasional Minor/Moderate (R1/R2) radio blackouts likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate solar activity has been observed with three Moderate class flares in the past 24 hours. There are up to six sunspot regions on the Earth-facing disc, with a small new region appearing to the southeast of AR3917 in the southwestern quadrant. The main changes in the period were for continued growth and spreading of the newly-numbered AR3924 in the south central disc, a continuation of the separation of the main spots of AR3920 in the north, and a tendency for the spots in AR3917 in the southwest to agglomerate.

No obviously Earth-directed Coronal Mass Ejections (CMEs) observed in available imagery, however this assessment is lower confidence due to the number of events in recent days and CMEs remain under review, although any impacts are felt most likely to be glancing - if present.

Solar Wind / Geomagnetic Activity: Solar winds showed an ongoing slow wind regime. Solar wind speeds were at background, 325-360km/s. The Interplanetary Magnetic Field (IMF), Bt, was weak and stable, with the north-south component, Bz, varying weakly. The net result of the above solar wind measures was for provisionally Quiet geomagnetic activity throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely, with occasional Moderate-class flares. There is a slight chance of isolated Strong-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs as of the issue of this guidance.

Slow wind conditions are expected until a faster solar wind onset, most likely late on Day 1 or into Day 2 (14-15 December). Geomagnetic activity is expected to start mostly Quiet as a result, then rising to give a spell of Unsettled to Active conditions with a Slight Chance of G1 Minor Storm intervals. Activity and solar winds expected to ease into the new working week, returning conditions to mainly Quiet to Unsettled.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: There is a daily slight chance of S1 minor solar radiation storms in response to any notable flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	15	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	70	60	55	55
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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